REMARKS

Claims 59-73 are currently pending and awaiting examination on the merits. Claims 59, 67 and 71 are amended hereby.

The February 2, 2006 Office Action found applicant's Amendment filed November 10, 2005 to be not fully responsive to the prior Office Action, on the grounds that the requested information regarding related litigation had not been submitted. As explained in the response that was filed, at that point in time the attorney handling the case had not had the opportunity to gather the requested information. The undersigned and his law firm had only recently assumed responsibility for prosecuting this case and obtained the relevant application file

The undersigned, and his law firm, represent the current owner of this application, Mentor Graphics Corporation. Mentor Graphics acquired this and other assets of Aptix in a transaction concluded in the summer of 2005. An Assignment of the present application, as well as other patent properties formerly owned by Aptix Corp., to Mentor Graphics, was executed on June 27, 2005 and July 6, 2005, and was recorded in the USPTO on September 1, 2005, at Reel 016945/Frame 0219. The inventor of the present application, Amr. M. Mohsen, is not affiliated with, nor employed by, present owner Mentor Graphics; he is not actively involved in this prosecution. Mentor Graphics (hereinafter "Assignee") is the real party in interest.

Assignee is now in a position to provide information to the Examiner responsive to his requests.

Related Patents/Applications

For the convenience of the Examiner, the status of the applications and patents related to the current application, and the relationship of these applications to each other, is set forth in a tree-style patent family chart attached hereto.

Related Litigation[1]

Two of the related patents are known to have been the subject of litigation. One is the patent which the Examiner identified, U.S. Patent No. 5,554,069. This patent has been involved in the following litigation: *Aptix Corp. et al. v. Quickturn Design Systems, Inc.*, Case No. C-98-00762, N.D. Cal., filed 2/26/98. This case ("the Quickturn litigation") is discussed below. The second related patent to have been involved in litigation is U.S. Patent No. 5,661,409: *Aptix Corp. v. Willmore et al.*, Case No. C-04-01522, N.D., filed 4/19/04. This case was voluntarily dismissed by Aptix within four months of being brought. See Complaint and court docket sheets, attached.

The Quickturn Litigation

The Quickturn litigation underwent extensive proceedings in the District Court for the Northern District of California (see court docket sheets, attached). Final judgment was rendered June 14, 2000 (2000 WL 852813, attached), dismissing the action as a terminating sanction for litigation misconduct found to have been committed by Aptix through the actions of its founder and CEO Amr Mohsen. That decision also held the '069 patent unenforceable based upon the same litigation misconduct.

Several appeals followed. The first appeal (No. 00-1323), by Quickturn Design Systems ("Quickturn"), sought reversal of the District Court's dismissal of Quickturn's counterclaim for abuse of process under California law. The Federal Circuit summarily affirmed the decision below on June 8, 2001 (see attached notice of affirmance under Fed.Cir.R. 36). The second

[1] This discussion is intended to provide the Examiner with information about the litigation proceedings that have taken place, and to highlight particular filings that the Examiner may consider relevant to the prosecution of the present case. The discussion references a number of documents relating to the litigations. Copies of many of the referenced documents are being submitted, and those documents are listed in a form PTO/SB/08 which is provided so that the Examiner can make of record his consideration of those documents.

appeal (Nos. 00-1468 and 00-1469) sought review of the District Court's final judgment dismissing the case as a terminating sanction, and its ruling that the '069 patent was unenforceable. The Federal Circuit affirmed the dismissal of the action as a terminating sanction for the litigation misconduct, but vacated the judgment of unenforceability. *Aptix Corp. v. Quickturn Design Systems, Inc.*, 269 F.3d 1369, 1378 (Fed. Cir. 2001) (copy attached). In its decision, the Federal Circuit noted:

> In the present case, however, the record discloses no misconduct in acquisition of the patent right. Moreover, Meta and Mentor licensed the '069 patent from Aptix before the present litigation. The record does not show that either company participated in any wrongful conduct during the litigation or before the PTO. Indeed, the trial court noted: "Meta may be a victim."
>
> In the absence of any showing of misconduct before the PTO, the '069 patent remains a presumptively valid grant of personal property.

Id. at 1377. The third appeal (No. 04-1368) was brought by Amr Mohsen personally, seeking review of the District Court's judgment voiding a security interest granted to Dr. Mohsen in the Aptix assets as a fraudulent transfer under California law. The Federal Circuit issued a written decision affirming the judgment below. *Aptix Corp. v. Quickturn Design Systems, Inc.*, 148 Fed.Appx. 924 (Fed. Cir. 2005) (copy attached).

Much of the District Court proceedings related to the issues regarding the engineering notebooks produced by Aptix, which formed the basis of the District Court's final judgment dismissing the case, and the Federal Circuit's decision on the appeal of that judgment. The Examiner has raised the issue of the potential relevance of these proceedings to the prosecution of the present application. In particular, the Examiner states: "There appears to be questions

regarding conception and reduction to practice of the claimed invention." Office Action mailed February 2, 2006, p. 3, para. 7.

Questions were raised by the litigation concerning whether Amr Mohsen could establish a date of invention for claims of the '069 patent that would precede the effective filing date of the application underlying that patent. Ultimately, however, Aptix and Meta elected not to rely on the disputed notebooks to establish an earlier date of invention. See, e.g., *Aptix Corp. v. Quickturn Design Systems, Inc.*, 2000 WL 852813 at *23 (N.D. Cal 2000) (final judgment). The earlier filing date issue raised by the notebooks is not relevant to the present application, as Assignee has not attempted to rely on those notebooks to establish a date of invention preceding the effective filing date of the present application.

Pursuant to the request for information, a review of the District Court's docket sheets (copy submitted herewith) was undertaken by the undersigned, and an attempt was made to obtain copies of entries that might possibly be relevant.

As a review of the Court's docket sheets reveals, the proceedings in the District Court included briefing on the evidentiary hearing conducted by the Court on May 9 and 10, 2000, pertaining to the allegations of fraud on the court (Docket #s 456, 457, 459), Markman proceedings and proceedings on a number of motions brought by defendant Quickturn challenging the validity and enforceability of the '069 patent. Tentative and final claim construction rulings were handed down following a claim construction hearing (Docket #s 314 and 352). The docket sheets further indicate that the following defense related motions were brought and briefed:

- Motion by Quickturn for summary judgment of non-infringement or, in the alternative, invalidity of Mohsen U.S. Patent No. 5,544,069 (Docket # 474).

- Motion by Quickturn for summary judgment that U.S. patent 5,44,069 is invalid for failure to comply with 35 U.S.C. 112 (Docket # 475).
- Motion by plaintiffs Meta Systems, Inc. and Aptix Corp. for summary judgment on Quickturn's (1) inequitable conduct defense; (2) inequitable conduct counterclaim; and (3) derivation defense (Docket # 480).
- Motion by Quickturn for summary judgment of invalidity of Mohsen U.S. Patent 5,544,069 under 35 U.S.C. 102(f) (Docket # 482).

Assignee's undersigned representative attempted to obtain copies of the briefing on the evidentiary hearing and the docket entries pertaining to the above motions, as well as both the tentative and final rulings on claim construction. The documents for this closed case were no longer available at the Court; therefore, a document retrieval company was commissioned to request the documents from a Federal archive where they were stored. A copy of the Tentative Ruling After Claim Construction Hearing (Docket # 314) and the Final Claim Construction Ruling Order (docket # 352) was obtained, as were a copy of the Joint Claim Construction Statement (Docket # 45) and the Supplemental Joint Claim Construction Statement (Docket # 229). Some of the motions related documents were obtained. A copy of documents that were obtained from the Federal archive, or otherwise, are being submitted herewith, and the documents submitted are listed in the attached Form PTO SB/08.

In view of the confidentiality protective order entered in the litigation, Assignee is unable to submit documents filed under seal. Quickturn's motion for summary judgment of non-infringement or, in the alternative, invalidity of Mohsen U.S. Patent No. 5,544,069 (Docket #474) was filed under seal, so a copy thereof is not being submitted. Without disclosing any confidential information, Assignee can advise that with this motion, Quickturn urged that claim

4-6 and 8 of the Mohsen '069 patent would be invalid over Butts U.S. Patent No. 5,036,473, under 35 U.S.C. §102(e), if those claims were construed to cover Quickturn's products. The District Court docket sheets show that Quickturn's Motion for summary judgment of invalidity of Mohsen U.S. Patent No. 5,544,069 under 35 U.S.C. §102(f) (Docket #482) was also filed under seal. While Assignee is unable to submit a copy of this, it is able to submit herewith a copy of plaintiffs' motion for summary judgment on this (and other) defenses (Docket #480).

Assignee has so far been unable to locate Quickturn's Post-Markman Supplemental Submission Under Local Rule 16-9(b), and the McCluskey Post-Markman Rule 26 Report referenced therein. The McCluskey Report is believed to be one of the documents (attachment No. 5) filed under seal as docket entry No. 477. No docket sheet entry was located for Quickturn's Supplemental Submission Under Local Rule 16-9(b). On information and belief, the undersigned understands this document to have been dated April 13, 2000, and to have set forth Quickturn's Post-Markman invalidity allegations as follows:

> Claims 4-8 of the Mohsen '069 patent are rendered obvious under 35 U.S.C. §102(g)/§103 and §102(e)/§103 by the channel routing architecture disclosed in, *e.g.*, the 1988 Butts engineering notebook, Bates numbered QMA0016018 [dated June 3, 1988], and Fig. 6 of Butts Patent Application Serial No. 07/254,463 ('the Butts '463 application"), in combination with the article entitled "Kit offers instant insights", *Electronics*, January 23, 1975, p. 70, attached as Exhibit 4 to the *McCluskey Rule 26 Report*, and the report entitlted "Digital Systems Laboratory Courses And Laboratory Developments", Cosine Committee, Commission on Education, National Academy of Engineering, March 1971, attached as Exhibit 5 to the *McCluskey Rule 26 Report* (Exhibits 4 and 5 are hereinafter collectively referred to as the "socket breadboard references"). This combination is suggested by Horowitz and Hill, *The Art of Electronics,* Chapter 12 [copyright 1980 and 1989], attached as Exhibit 12 to the *McCluskey Post-Markman Rule 26 Report.*

> Claims 4-8 of the Mohsen '069 patent are also rendered obvious under 35 U.S.C. §102(b)/§103 by the Spandofer Report entitled "Synthesis of Logic Functions on an Array of Integrated Circuits", AFCRL Report No. 66-298 (October 31, 1965), attached as Exhibit 2 to the *McCluskey Rule 26 Report*, in combination with the socket breadboard references, as suggested by Horowitz and Hill, *The Art of Electronics,* Chapter 12 [copyright 1980 and 1989]

Quickturn's Post-Markman Supplemental Submission Under Local Rule 16-9(b), at 5-6 (material in brackets supplied). To the extent Assignee was able to locate the references cited by Quickturn in the above excerpt, copies of these are being submitted with an IDS being filed herewith.

The Relationship of the Present Claims to Those of Related U.S. Patent No. 5,377,124

The amended claims presented herein recite at least one programmable integrated circuit which is programmable to at least partially form an interconnect. Thus, the pending claims of the present application generically cover single level programmable integrated circuit arrangements as well as the disclosed exemplary arrangement of first level programmable integrated circuits and a second level programmable integrated circuit (Fig. 3d), wherein the interconnect is completed through the second level programmable integrated circuit. Some of the new dependent claims expressly recite a second level programmable integrated circuit and exemplary disclosed arrangements thereof.

As requested in the Office Action, Assignee indicates below the differences between the currently pending claims and those of related U.S. Patent No. 5,377,124. This information is provided by way of a Track Changes comparison. It should be noted that Assignee is filing herewith a Terminal Disclaimer with respect to the '124 patent, to thus avoid any issues of obviousness-type double patenting. Assignee is also filing herewith a Terminal Disclaimer with

respect to related U.S. Patent No. 5,554,069, to thus avoid any issues of obviousness-type double patenting with respect to this patent:

59 (compared with claim 1 of the '124 patent). ~~Structure~~Apparatus comprising:

a printed circuit board ~~containing~~having in at least one first region a plurality of component contacts ~~for receipt of~~configured to receive electronic components;

a plurality of electrically conductive traces formed on ~~said~~ the printed circuit board, each of a selected number of ~~said~~ the traces being electrically connected to a corresponding one of ~~said~~ the component contacts and extending from ~~said~~ the at least one first region to at least one second region of ~~said~~the printed circuit board; and

at least one programmable integrated circuit mounted on ~~said~~the at least one second region and containing a plurality of conductive leads, ~~said~~the at least one programmable integrated circuit being programmable by a user to at least partially form an interconnect of selected electrically conductive traces on ~~said~~the printed circuit board to achieve a desired electrical function from the electronic components ~~to be connected to said printed circuit board;~~,

wherein ~~each~~ at least a plurality of ~~said~~the conductive leads ~~is~~ are electrically connected to a corresponding one of ~~said~~the electrically conductive traces formed on ~~said~~the printed circuit board ~~thereby~~ to form an electrically conductive path from each of ~~said~~the component contacts to the corresponding conductive lead ~~on said~~of the at least one programmable integrated circuit~~;~~, and

wherein ~~said~~the printed circuit board, ~~said~~the selected number of conductive traces, and ~~said~~ the component contacts have a standard configuration independent of the electronic components ~~to be mounted on said at least one first region~~ and the electrical function to be implemented by ~~said~~the electronic components when selectively interconnected by ~~said~~the at least one programmable integrated circuit.

60 (compared with claim 2 of the '124 patent). ~~Structure~~ The apparatus ~~as~~ ~~in~~of claim ~~1~~59, wherein said printed circuit board contains more than one layer of conductive traces.

61 (compared with claim 3 of the '124 patent). ~~Structure~~ The apparatus ~~as~~ ~~in~~of claim ~~1~~-59, wherein at least some of ~~said~~ the plurality of component contacts comprise a plurality of holes in ~~said~~ the printed circuit board, each hole being appropriate for receipt of a conductive lead of an electronic component.

62 (compared with claim 4 of the '124 patent). ~~Structure~~ The apparatus ~~as~~ ~~in~~of claim ~~3~~-61, wherein the interior surface of each hole is plated with a conductive material.

63 (compared with claim 5 of the '124 patent). ~~Structure~~ The apparatus ~~as~~ ~~in~~of claim ~~4~~-62, wherein the conductive material on the interior of each hole is electrically connected to a corresponding one of ~~said~~ the electrically conductive traces.

64 (compared with claim 6 of the '124 patent). ~~Structure~~ The apparatus ~~as~~ ~~in~~of claim ~~1~~-59, further including ~~a multiplicity of~~the electronic components mounted on ~~said~~ the printed circuit board, each of the electronic components ~~containing~~ having at least two electrical leads, each electrical lead of ~~said~~ the electronic components making contact with a corresponding ~~component contact selected from said plurality~~one of the component contacts.

65 (compared with claim 8 of the '124 patent). ~~Structure~~ The apparatus ~~as~~ ~~in~~of claim ~~1~~-59, wherein at least some of ~~said~~ the component contacts on ~~said~~ the printed circuit board comprise pads, each pad being connected to a corresponding one of ~~said~~ the plurality of electrically conductive traces formed on ~~said~~ the printed circuit board.

66 (compared with claim 9 of the '124 patent). ~~Structure~~ The apparatus ~~as~~ ~~in~~of claim ~~8~~-65, wherein each pad is connected by a conductive lead to a hole formed through ~~said~~ the printed circuit board, ~~said~~ the hole being plated on its interior surface with a conductive material and ~~said~~ the hole being in electrical

contact with a corresponding one of ~~said~~ the electrically conductive traces formed on ~~said~~ the printed circuit board.

67 (compared with claim 11 of the '124 patent). ~~Structure~~Apparatus comprising:

a printed circuit board;

a ~~multiplicity~~plurality of first electrical contacts formed in ~~said~~ the printed circuit board ~~for receipt of the~~ configured to receive leads of electronic components to be mounted on ~~said~~ the printed circuit board;

a corresponding ~~multiplicity~~plurality of second electrical contacts formed in a selected region of ~~said~~ the printed circuit board;

conductive traces formed on ~~said~~the printed circuit board, each of a selected number of ~~said~~the conductive traces uniquely interconnecting one of the first electrical ~~contact~~ contacts to a corresponding one of the second electrical contacts; and

at least one programmable integrated circuit chip mounted on ~~said~~the printed circuit board, selected ones of ~~said~~the second electrical contacts receiving leads from ~~said~~the at least one programmable integrated circuit chip thereby to enable a user to programmably at least partially form an interconnect of selected ones of ~~said~~the first electrical contacts so as to configure the electronic components to be mounted on ~~said~~the printed circuit board into a selected electrical circuit~~:~~.

wherein ~~said~~the printed circuit board, ~~said~~the selected number of conductive traces, and ~~said~~the first and second electrical contacts have a standard configuration independent of the electronic components to be mounted on ~~said~~the printed circuit board.

68 (compared with claim 12 of the '124 patent). ~~Structure as in~~The apparatus of claim ~~11~~ 67, further including means for ~~testing the~~determining a state of ~~said~~ the at least one programmable integrated circuit ~~to determine~~and for determining ~~the~~ a state of the signals on ~~said~~ the conductive traces.

69 (compared with claim 13 of the '124 patent). ~~Structure as in~~The apparatus of claim ~~12~~ 68, further including means for transmitting control signals to ~~said~~ the at least one integrated circuit chip and for controlling ~~the~~ a configuration of ~~said~~ the at least one integrated circuit chip so as to control the interconnection of the conductive traces formed on ~~said~~ the printed circuit board.

70 (compared with claim 14 of the '124 patent). ~~Structure as in~~ The apparatus of claim ~~11~~ 67, wherein ~~said~~ the printed circuit board comprises:

a first portion thereof containing the conductive traces for interconnecting the electronic components ~~formed thereon~~ without ~~the~~ use of a programmable integrated circuit; and

a second portion thereof containing the at least one programmable integrated circuit chip for interconnecting the electronic components formed on ~~at least said~~the second portion of ~~said~~ the printed circuit board.

71 (compared with claim 15 of the '124 patent). ~~Structure~~Apparatus comprising:

a printed circuit board;

a ~~multiplicity~~plurality of component holes ~~for receipt of~~configured to receive leads of electronic components;

a corresponding ~~multiplicity~~plurality of PIC holes;

one or more layers of conductive traces formed on ~~said~~ the printed circuit board, each of a selected number of ~~said~~ the conductive traces uniquely connecting at least one of the component ~~hole~~holes to at least one of the PIC holes; and

one or more programmable interconnect chips mounted on ~~said~~ the printed circuit board, selected ones of ~~said~~ the PIC holes receiving leads from ~~said~~ the one or more programmable interconnect chips ~~thereby~~ to enable a user to programmably at least partially form an interconnect of ~~said~~ the electronic components into a desired electrical circuit;,

wherein ~~said~~ the printed circuit board, ~~said~~ the selected number of conductive traces, and ~~said~~ the component and PIC holes have a standard

configuration independent of the electronic components to be mounted on ~~said~~ the printed circuit board.

72 (compared with claim 16 of the '124 patent). ~~Structure as in~~The apparatus of claim ~~15~~ 71, wherein ~~said~~ the printed circuit board comprises:

a first portion thereof containing the conductive traces for interconnecting the electronic components ~~formed thereon~~ without the use of a programmable integrated circuit; and

a second portion thereof containing at least one programmable integrated circuit for interconnecting electronic components formed on ~~at least said~~the second portion of ~~said~~ the printed circuit board.

73 (compared with claim 17 of the '124 patent). ~~The~~A method ~~of~~ for configuring an electronic system on a printed circuit board ~~characterized by the steps of~~, comprising:

creating a model of the programmable printed circuit board ~~containing~~having a plurality of component contacts for receipt of ~~the~~ leads of electronic components to be mounted on ~~said~~ the printed circuit board and a corresponding plurality of PIC contacts for receipt of the leads of one or more programmable interconnect chips ~~("PIC") said~~, the one or more programmable interconnect chips being programmable by a user of the printed circuit board so as to interconnect electronic components and conductive traces ~~in a desired fashion~~ so as to form ~~said~~ the electronic system, a selected number of conductive traces each connecting at least one component contact to at least one PIC contact;

simulating ~~the~~ a placement and routing of ~~selected~~ the electronic components on the component contacts;

simulating ~~the~~ an interconnection of the electronic components ~~in~~ by simulating a ~~desired fashion by simulating the~~ configuration of the one or more programmable interconnect chips to achieve such interconnection;

simulating ~~the~~ an electrical performance of the electronic system with the ~~electrical~~electronic components interconnected by the ~~progammable~~programmable interconnect chip;

determining ~~the~~ a system performance and a system characteristics~~s~~ with the electronic components so interconnected as a result of simulating the system so interconnected; and

repeating the above steps making ~~those~~ changes in placement of electronic components as indicated ~~to be required by~~ in accordance with results of the simulation until the above steps yield an electronic system ~~which yields the~~having a desired characteristics~~ and functional performance~~.

Conclusion

Assignee has endeavored to provide the Examiner with information that meets and exceeds the requirements for information set forth in the outstanding Office Action, in order to facilitate the examination of the present application, and in fulfillment of the duty of disclosure. Accordingly, examination on the merits of the pending claims is respectfully requested. Should the Examiner have any questions or desire any further information, the Examiner is invited to telephone the undersigned at the number indicated below.

Respectfully submitted,

Dated: 3/31/06

By: _____

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Family of Patents/Applications Claiming Priority to Application Serial No. 410,194 (now USP 5,344,124) "Field Programmable Printed Circuit Board"